

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROMITSU KAWAMURA,
KAZUHIRO YAMAJI, HISASHI HAMAGUCHI,
HARUHISA SODA and KIYOTSUGU KAMITE

Appeal No. 96-4083
Application 08/268,039¹

ON BRIEF

Before THOMAS, FLEMING and GROSS, ***Administrative Patent Judges***.

¹ Application for patent filed June 29, 1994.

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FLEMING, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 5, 15 through 20, 33 through 42 and 45 through 47. Claims 7, 8 and 29 have been allowed. Claims 1 through 4, 6, 9 through 14, 21 through 28, 30 through 32, 43 and 44 have been cancelled.

Appellants' invention relates to an optical semiconductor device capable of producing light with a stable wavelength. On page 12 of the specification, Appellants disclose that Figure 7 shows a principle and fundamental configuration of an optical device according to the first aspect of the present invention. On page 13 of the specification, Appellants disclose that Figure 7 shows a semiconductor laser diode 1 and an optical modulator 2. Figure 7 further shows a resistor means 5 which is connected in between the current source 4 and the input of semiconductor laser diode 1.

A common connection means 3 connects the outputs of the semiconductor laser diode 1 in the optical modulator 2 and the input of impedance means 8. The resistor means operates as a resistor at least at a high frequency. Thus, the impedance of the path via the laser diode 1 becomes relatively large. Consequently, the high frequency signal at the common connection means 3 due to the drive signal

is more easily conveyed to ground via the impedance means 8. Therefore, the influence of the drive signal to the semiconductor laser diode 1 can be reduced, thereby producing light with a stable wavelength.

Appellants disclose on page 13 of the specification that Figure 8 shows a configuration of an optical semiconductor device circuit according to the second aspect of the present invention. On page 14 of the specification, Appellants disclose that Figure 8 shows a bypass capacitor 9 connected in parallel with the semiconductor laser diode 1. As described above, the high frequency signal at the common connection means 3 due to the drive signal is conveyed to

ground. Therefore, an influence of the fluctuation on the semiconductor diode 1 can be reduced.

Independent claims 5 and 33 are reproduced as follows:

5. An optical semiconductor device comprising:

a semiconductor laser diode;

a power supply including a bias current source for biasing said semiconductor laser diode;

an optical modulator for modulating the light output from said semiconductor laser diode in response to an applied modulation signal, said semiconductor laser diode and said optical modulator installed in a package;

a resistor connected in series between an electrode of said semiconductor laser diode and said bias current source for inputting bias current to said semiconductor laser diode to generate light, said resistor being installed in said package;

common connection means connected to one electrode of said semiconductor laser diode and to one electrode of said optical modulator;

at least one of impedance means and signal reflection means connected to said common connection means; and

ground means connected to at least one of said impedance means and said signal reflection means.

33. An optical module comprising:

a semiconductor laser diode;

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an optical modulator for modulating the light output from said semiconductor laser diode in response to an applied modulation signal; and

a bypass capacitor whose electrodes are respectively connected to an electrode of said semiconductor laser diode to which said power supply is connected and a common connection means connected to one electrode of said semiconductor laser diode and to one electrode of said optical modulator within said module.

The references relied on by the Examiner are as follows:

Fenner	3,504,302	Mar. 31, 1970
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Suzuki et al. (Suzuki), "Electrical and Optical Interactions between Integrated InGaAsP/InP DFB Lasers and Electroabsorption Modulators," Journal of Lightwave Technology, Vol. 6, No. 6 (June 1988), pp. 779-785.

Claims 33 through 42 stand rejected under 35 U.S.C. § 102 as being anticipated by Suzuki. Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fenner.

Claims 15 through 20 and 45 through 47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fenner and Suzuki.

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Rather than repeat the arguments of Appellants or the Examiner, we make reference to the brief and the answer for the respective details thereof.

OPINION

After careful review of the evidence before us, we agree with the Examiner that claims 33 through 42 are anticipated under 35 U.S.C. § 102 by Suzuki. In addition, we agree with the Examiner that claims 5, 15 through 20 and 45 through 47 are unpatentable under 35 U.S.C. § 103 over Fenner and Suzuki.

At the outset, we note that Appellants have indicated on page 5 of the brief that claim 5 should stand alone in this appeal. Also, we note that the Appellants have indicated on page 6 that claims 33 through 42 on appeal should all stand or fall together and that claims 15 through 20 and 45 through 47 on appeal should all stand or fall together.

37 CFR § 1.192(c)(7) (July 1, 1995) **as amended at** 60 Fed. Reg. 14518 (March 17, 1995), which was controlling at the time of Appellants' filing the brief, states:

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For each ground of rejection which appellant contests and which applies to a group of two

or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

Appellants have provided a statement that claim 5 stands alone. Appellants have also provided a statement that claims 33 through 42 stand or fall together as one group and claims 15 through 20 and 45 through 47 stand or fall together as one group. We will, thereby, consider the Appellants' claims as standing or falling together in regard to these two groups. Thereby, we will treat claim 33 as a representative claim of the group of claims 33 through 42 and we will treat claim 15 as a representative claim of the group of claims 15 through 20 and 45 through 47.

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It is axiomatic that anticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim. **See *In re King***, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) and ***Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.***, 730 F.2d 1452, 1458,

221 USPQ 481, 485 (Fed. Cir. 1984). "Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." ***RCA Corp. v. Applied Digital Data Systems, Inc.***, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984), ***cert. dismissed***, 468 U.S. 1228 (1994), ***citing Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983).

Appellants argue on page 9 of the brief that Suzuki does not disclose Appellants' limitation of having the bypass capacitor directly connected to the common substrate. We note Appellants' claim 33 recites "a bypass capacitor whose electrodes are respectively connected to an electrode of said

semiconductor laser diode to which said power supply is connected and a common connection."

On pages 3 and 4 of the Examiner's answer, the Examiner argues that Suzuki teaches a bypass capacitor which is connected to a common connection as recited in Appellants' claim 33. The

Examiner argues that Suzuki teaches connecting in parallel a bypass capacitor with the laser diode. The Examiner argues that two electrical devices are in parallel when the positive

terminals are joined to one conductor and all the negative terminals are joined to another conductor. The Examiner points out that in order for the capacitor and the laser to be in parallel, the positive terminals would have to be joined and the negative terminals would also have to be joined. The Examiner argues that the bypass capacitor would have to be connected to the electrodes of the laser diode and the common connection means in order to establish a parallel connection.

We note on page 782 of Suzuki, first column, that Suzuki teaches a bypass capacitor connected in parallel to the

laser diode. We agree with the Examiner that this teaching would reasonably would have conveyed to those skilled in the art that the bypass capacitor would be connected to the positive terminal of the laser diode and then to the common terminal which would be ground. Therefore, we find that Suzuki teaches all the limitations as recited in Appellants' claim 33.

On page 6 of the brief, Appellants point to Figure 9 of Suzuki and state that Figure 9 only shows capacitance C connected to ground which represents the modular part of the device, consisting of a p-n junction capacitance, the bonding-pad capacitance, and the stray capacitance. We note that Figure 9 of Suzuki is not directed to the bypass capacitor as taught earlier on page 782. Turning to page 783, Suzuki teaches that the capacitance shown in Figure 9 is related to the p-n junction capacitance, the bonding-pad capacitance, and the stray capacitance of the laser diode itself. Therefore, the circuit shown in Figure 9 is a circuit model for the frequency

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response of the laser diode and not a showing of the bypass capacitor taught on page 782.

On page 9 of the brief, Appellants further argue that Suzuki fails to disclose the use of a Peltier element to cool the substrate, as in the present invention. We note that claim 33 fails to recite this limitation.

Appellants' claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fenner. On page 10 of the appeal brief, Appellants argue that Fenner's resistor 20 is not installed in a package as required by Appellants' invention.

We note that claim 5 recites "a resistor connected in series between an electrode of the semiconductor laser diode and said bias current source for inputting bias current to said semiconductor laser diode to generate light, said resistor being installed in said package." Thus, we find that Appellants' claim 5 does require that the resistor is to be installed in a package.

On page 5 of the Examiner's answer, the Examiner argues that even though Fenner does not show installation of the resistor 20 in a package, packages were notoriously well known in the art and that it would have been obvious to those skilled in the art to install the resistor 20 in a package for protection and integration.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." **In re Fritch**, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), **citing In re Gordon**, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). The Federal Circuit reasons in **Para-Ordnance Mfg. Inc. v. SGS Importers Int'l Inc.**, 73 F.3d 1085, 1088-89, 37 USPQ2d 1237, 1239-40 (Fed. Cir. 1995), **cert. denied**, 117 S.Ct. 80 (1996), that for the determination of obviousness, the court must answer whether one of ordinary skill in the art who sets out to solve the problem and who had before him in his workshop the prior art, would have been

reasonably expected to use the solution that is claimed by the Appellants. We agree with the Examiner that it was well known in the art to package integrated circuits. Furthermore, we find that it was well known in the art that packaging was done for the purposes of providing protection and allowing simplicity of attachment. Therefore, we find that it would have been obvious to those skilled in the art to package the circuit shown in Figure 1 of Fenner. Therefore, we will sustain the Examiner's rejection of claim 5 under 35 U.S.C. § 103.

Claims 15 through 20 and 45 through 47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fenner and Suzuki. On page 11 of the brief, Appellants argue that neither of the cited references teaches, mentions or suggests the bypass capacitor connected between an electrode of the semiconductor laser diode and a common connection means as recited in claim 15. As shown above, Fenner does teach a bypass capacitor connected between an electrode of the semiconductor diode and the common connection means.

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Therefore, we will sustain the Examiner's rejection of claims 15 through 20 and 45 through 47.

In view of the foregoing, the decision of the Examiner rejecting claims 33 through 42 under 35 U.S.C. § 102 is affirmed. In addition, the decision of the Examiner rejecting claims 5, 15 through 20 and 45 through 47 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

	JAMES D. THOMAS)	
	Administrative Patent Judge)	
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	MICHAEL R. FLEMING)	APPEALS AND

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